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(54) Foodstuff base.

(57) The present invention relates to a foodstuff base which is intended particularly for consumer packages of fresh meat. The base formed from sheet material by pressing into a basin comprises an upper paper or carton layer 5 provided with a non-adhering, liquid-permeable surface 8, thereunder a liquid impermeable block layer 6 made of polymer, and thereunder a lower carton layer 7. The surface of the base can be calendered or it can be formed from a polymer coating layer 8 provided with liquid-permeable apertures or pores. The permeable surface 8 enables the fluid extracting from a packaged product, such as meat, to absorb into the upper carton layer 5 acting as the absorption layer. The block layer 6 prevents liquid from being absorbed into the lower carton layer 7 acting as the absorption layer. The block layer 6 prevents the liquid from absorbing into the lower carton layer 7 which acts as a dry keeping, stiffening element.

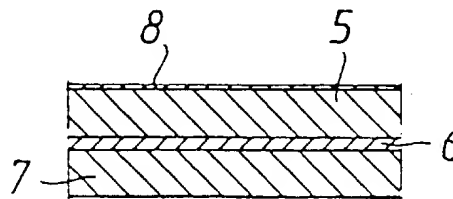


Fig.3

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The present invention relates to a foodstuff base, intended particularly for consumer packages of meat, and which is made from fibre-based material formed into a basin.

A general way of packaging foodstuffs in consumer packages to be sold in supermarkets is to place a product on a base formed into a basin and then to enclose it with a transparent plastic film. Foamed plastic has usually been used as the material for the base. A drawback of plastic is however that it is nearly undecomposable in dumping areas. In addition, plastic lacks any absorption ability, which is a drawback in packages of such foodstuffs from which liquid is extracted. Particularly for packages of fresh meat, a plastic base is inappropriate.

The absorption problem has been avoided in a foodstuff base known in the art, in which two layers of expanded polystyrene have been placed on top of each other, the upper one of which being perforated, and wherebetween an absorption layer made of paper or other fibre material has been inserted. The essentially plastic base is not, however, biodegradable.

The biodegradability requirement is met by a prior art foodstuff base pressed from mass by so-called egg-cell technique, typically composed of fibres and microwaxes. Such base is excellently appropriate for packages intended for fruit and other dry foodstuffs. On the contrary, from moist foodstuffs said base absorbs water, as a result of which the base becomes soft, loses its strength and becomes unattractive. Endeavours have been made to reduce the wettability of a base pressed from such mass by means of various adhesives, but for instance for packages of fresh meat, no success has been achieved when trying to provide a well functioning base material.

The object of the present invention is to provide a fibre-based foodstuff base in which the above-mentioned drawbacks of the bases known in the art have been eliminated. A special aim is to produce a compostable, absorbable base which is appropriate for packaging fresh meat extracting meat fluid. Characteristic of the base of the invention is that it comprises a laminated structure, including an upper paper or carton layer provided with a non-adhering, liquid-permeable surface, a block layer thereunder made of polymer and impermeable to any liquid, and a lower carton layer thereunder forming a stiffener.

In a base of the invention, the upper paper or carton layer serves as an absorption layer to absorb liquid extracting from a produce, such as meat, into itself so that no liquid remains lying unattractively on the base. The blocking layer made from polymer and located under the absorption layer in turn prevents penetration of the liquid deeper into the base structure. The second carton

layer underneath the block layer thus remains dry, and, on the whole, the package remains, despite the absorption of liquid, rigid and esthetically immaculate. The material of the base of the invention is recyclable, it can be destroyed by burning and being composed of disintegratable polymer layers, it becomes decomposed in composts and dumping sites.

A requirement set for the surface of the base according to the invention is that it allows liquid therethrough to absorb into the absorption layer made of paper or carton and that no moist foodstuff such as fresh meat will adhere to it. Alternatives in the design are either sealing by calendering the surface of the upper paper or carton layer acting as the absorption layer or providing said surface with polymer coating with liquid-permeable apertures or pores. With either of the ways a surface can be provided, which, as regards non-adherence, corresponds to state of art plastic foodstuff bases.

A porous, liquid permeable polymer coating can be provided using a so small amount of polymer that it is simply not enough to create a uniform, impermeable coating film. For instance, in a film which contains about 1 to 10 g/m<sup>2</sup>, preferably about 5 to 10 g/m<sup>2</sup>, of polyethylene, micropores are left which suffice to allow liquid to be absorbed in the absorption layer. Alternatively, the polymer coating can be applied on the base intentionally so that the coating film will not be uniform but liquid permeable spots are left therein. The coated and uncoated areas of the base may in such instance have a regular shape, e.g. so that the openings in the coating are mutually of the same size and at a regular spaces from one another, or so that the coating is applied on the base as raster-like pads mutually of same size and at regular distance from each other. In order to provide non-adherence, the coating should, however, cover at least 10 per cent, preferably about 30%, most preferably at least 50% of the surface area of the base.

According to an advantageous embodiment of the invention, the openings without any polymer coating on the surface of the base are continued into the carton layer underneath, penetrating it as far as to the polymer block layer. Herewith, the contact surface between the liquid and the carton layer can be increased and in that way absorption intensified, without having to reduce the proportion of the polymer-coated area on the base surface.

In a foodstuff base according to the invention, especially in one intended for consumer packages of fresh meat, the quantity of polymer coating may vary e.g. in the range 1 to 30 g/m<sup>2</sup>, preferably 5 to 30 g/m<sup>2</sup>, the weight of the upper paper or carton layer being e.g. in the range 20 to 400 g/m<sup>2</sup>, preferably 60 to 400 g/m<sup>2</sup>, and most preferably

about 200 g/m<sup>2</sup>, the weight of the liquid-impermeable block layer, which can be of the same polymer material as the coating, varying e.g. from 5 to 30 g/m<sup>2</sup>, preferably 10 to 30 g/m<sup>2</sup>, and the weight of the lower carton layer, serving as the stiffener, may vary e.g. in the range 200 to 400 g/m<sup>2</sup>, preferably about 200 g/m<sup>2</sup>. Especially for a large-size base, even more massive carton layers can advantageously be used.

The invention is described below more in detail with the aid of examples, by referring to the accompanying drawing, in which

Fig. 1 presents a basin-like foodstuff base in oblique top view,

Fig. 2 presents a base design according to the invention, in which the base bottom is calendered,

Fig. 3 presents another base design according to the invention, in which the base is provided with thin polymer coating,

Fig. 4 presents a further base design according to the invention, in which the base surface includes openings penetrating the polymer layer and the carton layer thereunder, section IV-IV from Fig. 5,

Fig. 5 presents the base of Fig. 4 in top view,

Fig. 6 presents a base design according to the invention provided with polymer coating as pads separated in raster-like fashion from each other, section VI-VI of Fig. 7, and

Fig. 7 presents the base of Fig. 6 in top view.

The foodstuff base 1 presented in Fig. 1, which is particularly intended for consumer packages of fresh meat for sale especially in supermarkets, has been produced from a fibre-based, laminated sheet material formed by pressing into a basin. The base 1 comprises a substantially uniform bottom 2 and obliquely upward directed margins 3.

Fig. 2 presents an example of the layer structure of the material of base 1 as shown in Fig. 1. The structure comprises an upper carton layer 5 calendered on surface 4, thereunder a block layer 6 made of polymer, and lowermost a lower carton layer 7. The layers 5 and 7 may be made of an ordinary carton manufactured in a carton-making machine, the weight thereof being advantageously about 200 g/m<sup>2</sup>. The weight of the block layer 6, which can be water-impermeable, is e.g. 15 g/m<sup>2</sup>, and as the material thereof, e.g. polyethylene, polypropylene, polyethylene terephthalate as well as various varnishes can be considered, such acrylate-based varnishes (e.g. varnish No. 42988 produced by Roymal Inc. or DC 2000 and DC 2001 products by Dussek Campbell Ltd.) and styrene varnishes.

The surface 4 of the upper carton layer 5 has with the aid of calendering accomplished with heat and pressure been so sealed that a product entering against the surface, such as fresh meat, will not readily adhere thereto. The calendered surface is, however, sufficiently porous so that the meat fluid extracting from the meat, being mostly water, is enabled to absorb into the upper carton layer 5 acting as the absorption layer. The polymer block layer 6 prevents water from absorbing into the lower carton layer 7 which therefore remains dry and supported by which the base remains rigid in use.

The embodiment of the invention presented in Fig. 3 differs from the one shown in Fig. 2 only in that instead of calendering the surface of the upper carton layer 5, the base material has been provided with thin polymer coating layer 8. The weight of the coating layer 8 is 1 to 10 g/m<sup>2</sup>, and the same materials are suitable for its material as in the block layer 6. In addition, from among appropriate coating materials, acrylate varnish Rebarco EP 716 by Company Raisio Yhtymä can be mentioned as an example. Coating layer 8 can be applied on the carton 5 as aqueous or dissolvent dispersion from which the intermediate agent is removed after application by evaporation. The essential feature is that micropores are left in the thin coating layer 8 through which liquid extracted from the packaged product, such as meat fluid, is enabled to absorb into the carton layer 5 thereunder.

Figs. 4 and 5 present an embodiment of the invention in which, deviating from Fig. 3, the polymer coating layer 8 is thicker, advantageously about the same thickness as the block layer 6. The mass of the coating layer 8 is now about 10 to 30 g/m<sup>2</sup>. Openings 9 have been made in the coating layer 8, extending through the upper carton layer 5 serving as absorption layer, into the polymer block layer 6. The openings 9 are round in shape, being about 1 to 5 mm in diameter, preferably 3 to 4 mm, and they have been arranged in the base material in regular longitudinal and transverse rows as shown in Fig. 5, at about 1 cm mutual spaces. The openings 9 lead liquid extracted from a packaged product through the otherwise liquid-impermeable coating layer 8 into the absorbing carton layer 5. It is enough, with a view to the invention, that there are openings 9 in the area of the bottom 2 of the base 1, although, when producing bases by cutting and pressing from homogenous sheet material already provided with openings therein, the pattern produced by openings may, of course, cover also the marginal areas 3 of the base.

In the application of the invention presented in Figs. 6 and 7 the polymer coating is applied on the surface of the base material as pads 10 separated in raster-like fashion from each other. As regards

the other layers 5,6,7 of the material, this embodiment corresponds to that presented in Fig. 3. The pads 10 are round, about 1 to 10 cm in diameter, and as shown in Fig. 7, they are placed as regular longitudinal and transverse rows on the surface of the upper carton layer serving as the absorption layer. The size and mutual distances of the pads 10 are so selected that they cover at least about 30%, preferably at least 50% of the surface of the base. The polymer material of the pads prevents now the product, such as fresh meat, from adhering onto the surface of the base at the same time as the liquid extracting from the product is enabled to penetrate between the pads and absorb into the carton absorption layer 5 thereunder. The polymer coating used in pads may, depending on the production technique, cover either the bottom 2 of the base or the base surface in its entirety.

It is obvious to a person skilled in the art that various embodiments of the invention are not confined to the examples presented above, and they may vary within the scope of the accompanying claims. For instance, the embodiment as in Fig. 4 can be modified so that the apertures 9 are arranged only in the polymer coating layer 8, without continuing into the paper or carton absorption layer 5 thereunder. This is advantageous particularly if the absorption layer 5 is made of paper, in other words, it is substantially thinner than that in Fig. 4. The apertures 9 of the coating layer 8 can be made with perforated polymer film laminated onto the surface of the base material which is otherwise finished at the same time as the material is pressed into a basin. The holes in the film maintain their shape during lamination and form on the surface of the finished base the desired water-permeable apertures. It is furthermore possible to add more layers on the laminated base materials presented, such as paper to be attached to the base bottom for printing.

#### Claims

1. A foodstuff base (1), which is especially intended for consumer packages of meat and is comprised of fibre-based material formed into a basin, is characterized in that the base comprises a layer structure including an upper paper or carton layer (5) provided with non-adhering, liquid-permeable surface (4,8,10), thereunder a liquid-impermeable block layer (6) made of polymer, and under said layer a lower carton layer (7) producing a stiffener.
2. Foodstuff base according to claim 1, characterized in that the surface (4) of the upper paper or carton layer is calendered to be non-adhering.

3. Foodstuff base according to claim 1, characterized in that the upper paper or carton layer (5) is provided with polymer coating (8,10) provided with liquid-permeable apertures (9) or pores.
4. Foodstuff layer according to claim 3, characterized in that the upper paper or carton layer (5) has about 1 to 10 g/m<sup>2</sup> of coating essentially as a uniform layer (8) provided with micro-pores.
5. Foodstuff base according to claim 3, characterized in that the coating (8) has apertures (9) with a diameter of about 1 to 5 mm, preferably about 3 to 4 mm.
6. Foodstuff base according to claim 5, characterized in that the apertures (9) of the coating also penetrate the carton layer (5) thereunder.
7. Foodstuff base according to claim 3, characterized in that the polymer coating is applied on a paper or carton layer (5) as pads (10) separated in raster-like fashion from each other.
8. Foodstuff base according to any one of claims 5 to 7, characterized in that the coating (8,10) covers at least about 30%, preferably at least about 50% of the paper or carton layer (5) underneath.
9. Foodstuff base according to any one of claims 5 to 8, characterized in that the liquid-permeable polymer coating (8,10) covers the area of the basin bottom (2).
10. Foodstuff base according to any one of claims 3 to 9, characterized in that the weight of the polymer coating (8,10) is about 1 to 30 g/m<sup>2</sup>, the weight of the upper paper or carton layer (5) is about 20 to 400 g/m<sup>2</sup>, of the block layer (6) being about 5 to 30 g/m<sup>2</sup>, and the weight of the lower carton layer (7) being about 200 to 400 g/m<sup>2</sup>.

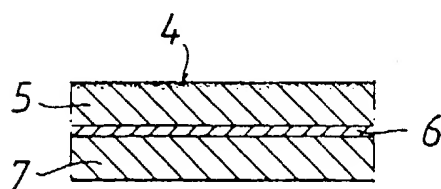
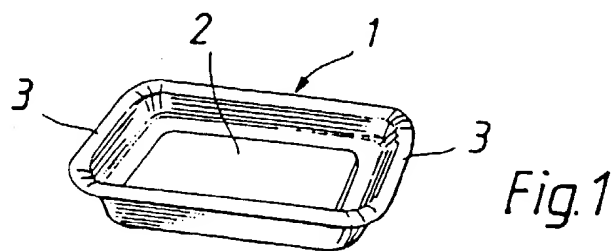


Fig. 2

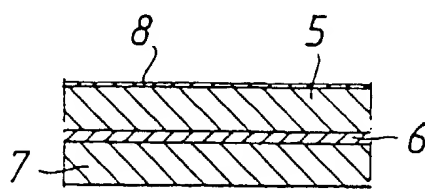


Fig. 3

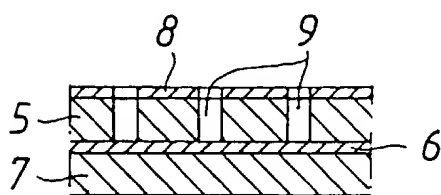


Fig. 4

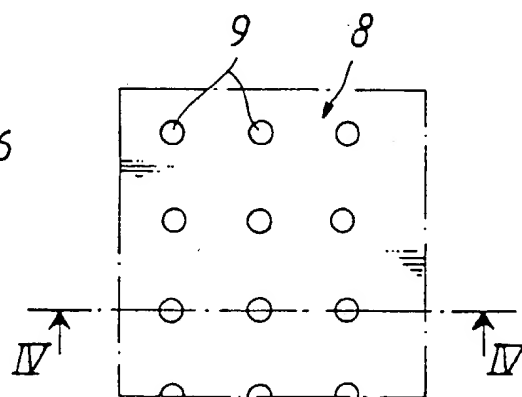


Fig. 5

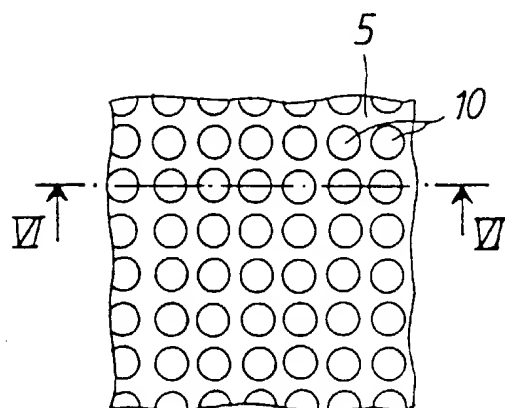


Fig. 7

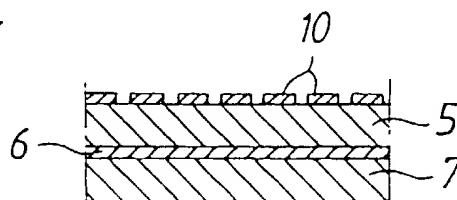


Fig. 6



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# EUROPEAN SEARCH REPORT

Application Number  
EP 95 10 3251

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X A	WO-A-91 00835 (PIETREK) * page 6, line 6 - page 9, line 4 * ---	1,3,4 2,5-10	B65D81/26
A	DE-U-91 09 537 (BARTLING-WERKE) * page 6, line 3 - page 7, line 7; figures 1,2 * ---	1-6	
A	EP-A-0 320 314 (TERADA) * column 1, line 59 - column 3, line 64; figures 1-6 * -----	1-6	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B65D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 12 July 1995	Examiner Vantomme, M
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons A : number of the same patent family, corresponding document	